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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/381,828	11/24/99	SKOLD R	2964-102P

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EXAMINER	
SODERQUIST, A	
ART UNIT	PAPER NUMBER
1743	8

DATE MAILED: 07/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

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Office Action Summary	Application No. 09/381,828	Applicant(s) Skold
	Examiner Arlen Soderquist	Art Unit 1743

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ______.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above, claim(s) ______ is/are withdrawn from consideration.

5) ☐ Claim(s) ______ is/are allowed.

6) ☒ Claim(s) *1-10* is/are rejected.

7) ☐ Claim(s) ______ is/are objected to.

8) ☐ Claims ______ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on ______ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on ______ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ______.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 7

18) ☐ Interview Summary (PTO-413) Paper No(s). ______

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin, Semakov or Zheng in view of Charos, Peleg or Speyer.

In the paper Lin presents simultaneous determination of physical and chemical properties of sodium chloride solutions by near infrared spectroscopy. Near IR (NIR) spectroscopy has been investigated as a new technique for the simultaneous determination of physical and chemical properties of NaCl solutions. The spectra of NaCl solutions (21 solutions in the range of 0 to 5M) were measured with cuvettes in the 1100-2500 nm and 680-1230 nm regions at temperatures between 23.0 and 28.5°, and with a fiber-optic probe in the 1100-1870 nm region at room temperature (23.0 ± 0.5°). These spectra were correlated with various properties of NaCl solutions by principal component regression (PCR) and multilinear regression (MLR) models. The properties studied include water concentration, density, refractive index, relative viscosity, freezing point depression, osmolality, electrical conductance and activity coefficients of NaCl. Very good correlations were found between the NIR predicted values and literature values. The results of this study demonstrate that several properties of NaCl solutions can be determined

simultaneously with NIR spectroscopy. Remote sensing of the properties can be performed with the use of a fiber-optic probe. Lin does not teach a computer controlled device for the measurement or a three dimensional representation of the results.

In the paper Semakov discusses viscoelasticity and effects of interphase interaction in blends of normal and liquid crystalline thermoplasts. Viscoelastic characteristics (Young's modulus, loss modulus, loss tangent) of blends of bisphenol A-dichlorodiphenyl sulfone copolymer with liquid-crystalline dihydroxyphenyl-isophthalic acid-terephthalic acid copolymer were determined by the dynamic mechanical method in the shear deformation regime in the whole range of the blend compositions at temperatures ranging from -150° to +200°. Computer processing of the experimental results permits to present them as 3-dimensional modulus-temperature-blend composition diagrams or 2-dimensional maps of modulus isolines. This approach led to the detection of small shifts in the positions of the α- and γ-relaxation transitions of one polymer in the presence of the other polymer. Splitting of the glass temperature of the polysulfone was explained by differences in the relaxational mobility of its macromolecules near the interphase and further away from the interphase. Analysis of the experimental data using the Tsyao-Halpin model led to the conclusion about enhanced interaction of the components of the blend in the interphase. Semakov does not appear to teach computer control of the experimental process.

In the paper Zheng discusses mass density and polymerization line for living poly(α-methylstyrene) near the polymerization line. The mass density, ρ, of solutions of living poly(α-methylstyrene) (I) in THF as a function of temperature near the polymerization temperature, Tp, was measured. The values are measured with a precision in density of 4×10^{-5}; the accuracy is limited by knowledge of the composition to about 3%. $\rho(T)$ Data is compared to 2 models of equilibrium polymerization as a 2nd-order phase transition: the $n \rightarrow 0$ magnet model and the mean-field model as applied to a living polymer in a solvent. For both models, an ideal solution of the ionic polymer in the solvent, and linear thermal expansions for the monomer, the polymer, and the solvent were assumed. The description of the data then requires the addition of constants (background densities) for both models; the constants are probably related to the excess

volumes of mixing. When such constants are included, both models provide good qualitative descriptions of $\rho(T)$ for living I in THF. The $n \rightarrow 0$ magnet model is capable of more accurate representations of the data. A model for a living polymer in a solvent which is more appropriate than the $n \rightarrow 0$ model is the dilute $n \rightarrow 0$ model, but the equation of state of the dilute $n \rightarrow 0$ model has not yet been developed. That the $n \rightarrow 0$ model describes so well the data for a system which includes a solvent suggests that the solvent does not affect strongly the percentage conversion of monomer to polymer at a given (Tp-T). In the course of the measurements of the density and of other physical properties of this system, the polymerization line (the dependence of the polymerization temperature on the initial mole fraction of monomer xm*) is measured. Measurements determine Tp(xm*) from the changes in the slopes of physical properties (e.g., density) and differ from determinations of the polymerization line which measure the monomer concentration at some value of T and then assumes the xm* when the polymerization line passes through that value of T. Zheng does not teach a computer controlled device for the measurement or a three dimensional representation of the results.

In the paper Charos presents three-dimensional PTx phase diagrams through interactive computer graphics. Interactive computer graphic techniques were developed for the display of binary mixture phase diagrams. The diagrams are defined in temperature-pressure-composition space, and are pictured as wireframe objects with depth perception in order to provide a three-dimensional effect. The displays used were vector refresh workstations whose transformation hardware allows real-time rotation, rescaling, and translation of the diagrams, while software allows the extraction of constant property Px, Tx, PT, and x-y plots. The equilibrium surfaces and the critical lines were calculated by using the Redlich-Kwong equation of state and its Soave modification.

In the paper Peleg presents a mathematical characterization of the plasticizing and antiplasticizing effects of fructose on amylopectin. Published data indicate that admixture of fructose to amylopectin increases the latter's stiffness, but lowers its glass transition temperature range and makes the transition sharper. It also dramatically increases the plasticizing effect of absorbed moisture. These effects are quantified in terms of the parameters of a mathematical

model based on Fermi's equation, which can describe mechanical changes at and around the glass transition of biopolymers, irrespective of whether it is sharp or broad. This model accounts for the mixture's stiffness dependency on both the fructose concentration and temperature, or moisture, with a single algebraic expression. It can also be used to create three-dimensional plots from which the combined effects of fructose and temperature, or moisture, can be viewed, and conditions of plasticization, or antiplasticization, be identified.

In the paper Speyer discusses a three-dimensional rendering and phase analysis of the CaO-Al_2O_3-SiO_2 system. A program for rendering ternary phase equilibria in 3-point perspective was developed using Microsoft Visual Basic. Algorithms for rendering and phase analysis are described. With the software, liquidus, subliquidus, and solidus surfaces can be generated, and the three-dimensional object can be rotated to any angle for viewing. The operator can select a composition on the top-view 2-dimensional projection, and surfaces pertinent to an isoplethal study will be displayed. A phase analysis plot is simultaneously displayed wherein relative proportions and compositions of phases are enumerated for any chosen temperature. Phase analysis calculations were based on methods of analytical geometry using best-fit polynomials for liquidus surfaces and their contact boundaries. Phase analysis involved separation into one of five possible modes of phase evolution during cooling.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add computer control and three dimensional graphics capabilities as taught by Charos, Peleg or Speyer into the methods and devices of Lin, Semakov or Zheng because of the ability to extract information through advantages of the three dimensional graphics as taught by Charos, Peleg or Speyer.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional art relates to physical and chemical properties that are dependent on temperature and composition of solutions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (703) 308-3989. The examiner can normally be reached from about 5:30 AM to about 3:00 PM on Mondays and from about 7:30 AM to about 5:00 PM on Tuesday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Another number for official papers is (703) 305-3599. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Arlen Soderquist

June 30, 2001

ARLEN SODERQUIST
PRIMARY EXAMINER